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AUTHOR Roth, Robert A.
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ABSTRACT

This report is a collection of research information on competency based teacher education (CBTE) programs. The methods of collecting data consisted of two surveys sent to teacher education institutions and an ERIC search using a variety of descriptors. In total, information was obtained relating to 56 institutions and 65 programs from 66 different studies. Three means of determining program effectiveness were selected and used as categories to classify the information: (1) pupil growth data, (2) capability of the program to provide trainees with the competencies identified, and (3) program reactions. In the pupil growth category nine studies were reported from eight different institutions. Seven of these studies were positive, and two found both positive and "no difference" results. Only one program provided data that could be considered a long term growth study. Eight studies were conducted which were classified as short term growth studies. There were 32 studies in which the attainment of competencies was assessed. Twenty-two found positive results, three found both positive and "no difference" results, two had "no difference" results only, and four had no conclusion. Forty-five reports were found to have information concerning reactions and/or feedback on programs. Thirty nine had generally positive feedback, four had mostly mixed reactions, and two were mostly negative. The study makes the general conclusion that CBTE type programs that are carefully planned, thoroughly developed, revised based on feedback, and have faculty support, have a high degree of success. (DT)

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EVIDENCE ON THE EFFECTIVENESS OF COMPETENCY BASED TEACHER EDUCATION PROGRAMS

Robert A. Roth

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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EVIDENCE ON THE EFFECTIVENESS OF CBTE PROGRAMS

PROBLEM AND APPROACH

The concept of competency-based teacher education (CBTE) has received considerable attention in the past several years. At least thirty-five states have become involved in studying ways of implementing or are actually developing such programs (Roth, 1974a). In addition, close to 500 teacher education institutions are operating or developing CBTE programs to some degree (Sherwin, 1973).

A great deal has been written on the positive and negative aspects of the CBTE approach. Almost every major education journal has carried the comments of both proponents and critics of these programs. Unfortunately, most of this rhetoric is based on the authors' assumptions about what CBTE will or will not do. Seldom is any evidence provided to support the assertions made.

In view of the phenomenal growth and incessant dialogue concerning competency-based teacher education, it would appear to be appropriate to ask for evidence, either pro or con, concerning the "effectiveness" of these programs. The term "effectiveness" can be interpreted in a variety of ways and will be considered further in a later paragraph.

The purpose of this study was to gather evaluation information on competency-based teacher education. In order to obtain such data it was necessary to first identify those institutions which were considered to have operational CBTE programs. A variety of sources, such as an AACTE list, were used to compile a master list of 215 programs (some institutions have more than one program). A letter requesting information on evaluation of these programs was sent to each of the program directors or Deans in April, 1975. The letter did not contain a definition of CBTE. Since there is no complete agreement on this definition each institution was given the freedom to respond accordingly. The request letter asked for any type of program evaluation data that could be provided, and gave the following examples:

- The effectiveness of trainees and/or graduates in promoting pupil learning;
- Verification that trainees and/or graduates attain the knowledge, skills, attitudes (competencies) stated as objectives of the program;
- Competency validation;

- Reactions to the program through questionnaires etc., given to students during the program, recent graduates with teaching experience, faculty, and employers;

- Any other program evaluation data.

Seventy-three responses were received, but several of these had referred the response to other staff members for response and six of these had not responded within five months of the request, thus the actual response was sixty-seven. Of the sixty-seven responses, seven indicated they did not have a CBTE program (two of these were "competency based" but not in teacher education). Of the remaining sixty, thirty-two indicated that they had no evaluation data to report (most common reason was that the program was too new). Data were provided on twenty-eight programs from the survey, but some programs had more than one study to report.

Serving as a second source of information on evaluation of CBTE programs was a survey of thirty teacher education institutions in the state of Michigan to determine their involvement in CBTE. This information was available from a previous study. There was a large number of programs at seventeen institutions, but data were received from six programs.

A third source of information was a comprehensive ERIC search of documents related to competency-based teacher education and evaluation of teacher education programs. This covered the period from January 1970 to July 1975, and used combinations of descriptors such as: Performance-Based Teacher Education, Program Evaluation, Evaluation Methods, Evaluation Techniques, and Evaluation Criteria. Both the Current Index to Journals in Education and Research in Education were searched. Evaluation data from several other programs were discovered from this source. Also, relevant papers presented at American Educational Research Association conferences or published elsewhere were used.

The total number of institutions on which information was obtained from all sources was fifty-six, the total number of programs was sixty-five, and the total number of reports was sixty-six.* Throughout this paper the term "pupil" refers to learners in the elementary and secondary grades, whereas the term "student" refers to trainees in teacher education programs.

*Surveys covered a number of institutions but each survey was counted only once under the "program" and "report" categories.

EVALUATION DATA CATEGORIES

In considering the effectiveness of any type of teacher education program it is necessary to first examine the ways of evaluating programs and the types of information which can be collected. There are three categories of information which were used in this study to classify information on the effectiveness of CBTE programs.

1. Pupil growth data: this includes data on the ability of trainees or graduates to promote pupil learning. Data or research which verifies this relationship in terms of designated competencies is, in effect, competency validation.

   Three subcategories are:

   a) long term effects - growth as a result of teacher-pupil contact of one semester or more.

   b) short term effects - growth as a result of a short term contact, e.g. microteaching with pupil testing, or student teachin

   c) pupil behaviors - reflects an ability of the trainee to engage pupils in meaningful activities which presumably lead to growth. This is considered a secondary criterion.

2. Competency attainment: this refers to the capability of the program to provide trainees with the competencies identified as objectives of the program. Any data which verify that trainees or graduates have attained the knowledge, skill, or attitude objectives (competencies) of the program would be included here, if they are the result of an actual competency assessment of trainees or graduates. Three means of collecting these data can be used as subcategories.

   a) Assessment of trainee competence during or upon exit from the program. The evaluation of training experiences and materials is included here, since the effectiveness of these materials should be judged on the basis of trainee achievement of the competency objective of the material or experience. Trainee performance data on modules, microteaching, and student teaching are thus included in this subcategory.

   b) Follow-up studies of graduates conducted by teacher training institutions to determine retainment and use of competencies. This would only include actual assessment of competencies such as through observation techniques.

   c) Performance evaluation data provided by employers who evaluate competencies of their teachers in the classroom.

3. Reactions and feedback on programs: This includes subjective statements through questionnaires etc., on the extent to which the competencies were perceived to have been attained, how effective training was perceived to be, and to what extent the training experience was interesting. Also included here might be consensus-reaching activities in developing competencies and feedback on their relevance and utility in the classroom. This may also be considered as competency "validation" but not in the more meaningful sense as found in pupil growth validation.

   Reactions could be obtained from at least five sources:

   a) Faculty involved in the program

   b) Trainees in the program (includes course or module evaluation, etc.)

   c) Recent graduates with teaching experience

   d) Employers or cooperating teachers

   e) Outside observers or evaluators.

A fourth category of information could be used to evaluate programs but was not considered in this analysis. This involves determining the degree to which a program has been implemented according to its design. Although this may be of value internally to the institution it is not pertinent to the purposes of this study and no data were collected in this regard.

The program evaluation information received was classified into the three categories described above and will be presented in that order.

EVALUATION RESULTS

Pupil Growth

A number of competency-based teacher education programs have described in the literature their activities in this area as part of the program design, e.g. Oregon College of Education, U.C.L.A. (teaching performance tests). The use of teaching tests and consequence (pupil growth) objectives have been described by several institutions, and it is thus suspected that more information is available than is summarized here. Much of this probably was not reported to this study either because the institution elected not to respond to the survey or the request never reached the appropriate personnel.

One study related to long term pupil growth was reported in the survey.

Teacher Corps: Marsh and Lyons (1975) studied the effectiveness of Sixth-Cycle Teacher Corps graduates compared to control group teachers. The relationship to CBTE is at best tentative, but is based on the indication that many of the courses of the higher education institutions in Teacher Corps were organized around the development of specific teacher competencies and allowed for the intern to learn at his/her own pace. Included in the study were all Teacher Corps graduates (1973-74 first year teachers, N = 84) who taught pupils in grades 2-6 in self-contained classrooms. Data about pupils were obtained using a standardized reading test, a standardized self-concept scale, and a classroom observation guide. There were no significant differences between Teacher Corps and control group classes on any reading measure, despite a greater emphasis on reading on the part of control group teachers in grades 2-3. Teacher Corps graduates, however, were able to bring about changes in a child's self-concept that were significantly greater than changes brought about by control group teachers. These changes consisted of observed expressions of greater happiness and greater self-worth in the classroom and better scores on important subscales of the self-concept scale (self-concept about appearance and attributes, and feelings of happiness and satisfaction). It should be noted, however, that there were no differences between Teacher Corps and control group graduates on teacher performance variables.

It was also found that the specification of teaching competencies (simulation/feedback) within a program framework was negatively related to teacher performance and pupil learning. A conclusion offered was that "it would be unfair to generalize too much from this finding, since competency-based education includes far more than simply the specification of competencies" (Marsh interview, 1975, p. 4).

Several other studies were cited which provide evidence under the subcategory of short term growth.

The University of Nebraska-Lincoln: Studies were conducted in relation to the Nebraska Un versity Secondary Teacher Education Program (NUSTEP). One study compared English education majors, fifteen of which were NUSTEP trainees and fifteen who were trainees in the conventional program. Both samples taught a small group of secondary school pupils an English grammatical concept lesson, and pupil achievement gain was measured through pre and post testing. Pupils instructed by NUSTEP trained teachers scored significantly higher on the post-test measures than the pupils instructed by the conventionally trained teachers. The researcher (Francke, 1971) concluded that a positive relationship existed between the NUSTEP stubject's ability to produce pupil achievement and his use of the teacher behaviors related to the NUSTEP model of instruction.

Upsala College in New Jersey: This institution reported that information derived from their module cluster dealing with diagnostic and prescriptive teaching in both the affective and cognitive areas indicates that the trainees are directly promoting pupil learning. Interns report success with pupils on the basis of pre and post diagnosis or post-testing, and this success is substantiated by cooperating teachers. The number of times this occurs is not discernable since records are not kept on this frequency (Hahn, 1975).

Illinois State University: ISU studied the effects of a competency-based training program involving a microplanning technique which consists of dividing tutorial teacher behavior into component parts. An experimental group of ten secondary school social studies majors and a control group of ten similar majors in the regular program taught four one-half hour lessons to five to ten high school pupils. The pupils were tested on two levels, recall and ability to reason based on the material covered, and the mean pupil score for each subject for each level constituted the criterion measure of teacher effectiveness. In all but two cases the experimental subject of each pair outperformed the control subject in terms of mean pupil achievement (Waimon, Bell, Ramseyer, 1972).

Another study was conducted later at Illinois State University by Waimon and Ramseyer (1974). During the 1973-74 year, all Professional Sequence students completing pre-student teaching requirements were required to take a teaching performance test administered at U-High Laboratory School. The teaching performance test was developed and field-tested at UCLA and results from testing at UCLA were compared with I.S.U. results. Pupil outcomes in the form of residual gain scores on a post-test of material covered in the teaching performance test were used as the criterion. Test data were generally comparable with that found at UCLA.

Indiana University: The effects of a minicourse consisting of twenty-seven teacher behaviors were studied at Indiana University by comparing a treatment group (trained with the minicourse) consisting of seven inservice

teachers with a control group of seven teachers. Second and third grade pupils (N = 115) of the experimental teachers were compared with a comparable group of pupils (N = 115) of the control group teachers. The covariance-adjusted post-test mean grade equivalent scores on the "Work Study Skills" and "Paragraph Meaning" subtests of the Stanford Achievement Test, and the covariance-adjusted post-test mean scores on the reading decoding tasks of the Minicourse Achievement Test were used to compare the pupils of the two groups (test-retest interval of fourteen weeks). A statistically significant ($p < .05$) difference indicated the superior performance of pupils in the classes of teachers trained with the minicourse ($p < .01$) for the "Word Study Skills" subtest but not reaching statistical significance at the .05 level for the "Paragraph Meaning" subtest. Also, pupils taught by minicourse teachers made significantly greater gains in reading decoding ability. Superior performance of minicourse teachers' pupils may have been partially attributed to greater familiarity with tasks required by the test items (Strickler, 1974).

Temple University: A pilot study was conducted at Temple University to begin evaluation of CBTE approaches. Beginning intern teachers were trained using a module on Establishing Pre-Instructional Set (EPIS). Pupils of these interns were given a content test on the lessons taught during a four week period. Product moment correlations between EPIS behaviors and adjusted pupil achievement data produced a significant positive correlation for the EPIS group of interns in the instance of the time fraction devoted to EPIS activities. While the overall reliability of the content test was acceptable (.83), two of the five subject area subtest values dropped below 0.5, suggesting a need for caution regarding the relationship with achievement (Bruce, 1975).

University of Utah: A Life Involvement Model (LIM) performance-based teacher education program was developed and tested at the University of Utah (Benjamins, et.al., 1974). The project provided trainees with all the competencies required to carry out a life-involvement educational program. The LIM project also consisted of a curriculum for elementary students providing for direct practice of "the behaviors of a responsible life." Four preservice LIM interns were at the LIM experimental schools for two quarters fulltime.

All sixty-two fifth and sixth grade LIM pupils participated in the evaluation procedures, as well as one hundred and thirty-eight "non-LIM" controls. Although the LIM curriculum did not emphasize the traditional academic areas of reading, writing, and arithmetic, LIM students in general did as well as traditional classes in overall achievement (Iowa Tests of Basic Skills). A Venture Process Test (VPT) on inquiry activity processes (LIM oriented) showed LIM students gained comprehension in these processes. The overall results on the creativity scales (Student Activities Questionnaire, Minnesota School Affect Assessment) indicated that although the LIM fifth

grade trend failed to achieve statistical significance, LIM students had acquired more of the creativity characteristics than the traditional class. Classroom environment indicators were positive on four factors, but were divergent on two others. Finally, as a result of LIM procedures and teacher efforts, positive student feelings and constructive attitudes were elicited from the LIM students. It should be noted that all of the findings of this project can be attributed to an interaction of both the performance-based teacher training and the LIM elementary school curriculum.

University of Hartford: In an effort to validate a competency, research was conducted at the University of Hartford. Twelve university interns were selected at random and randomly assigned to two groups, one of which received training in utilizing equivalent practice in teaching and the other group which did not. Elementary school pupils in grades five and six were randomly selected and assigned to interns (five pupils to each intern). Pupils were instructed in a microteaching session (maximum 20 minutes), and the instructional outcome consisted of the pupils' being able to write English phrases which had been sounded in International Morse Code. The experimental and control groups were compared with respect to use of the specific teaching skill trained for, and the mean number of words and mean number of letters translated by pupils. Classroom means were used as the unit of statistical analysis. Pupils taught by intern teachers trained to provide equivalent practice achieved only slightly better than pupils whose teachers had not been trained in the skill, and the differences were not statistically significant. Significant correlations were found between the proportion of time each teacher spent providing equivalent practice, proportion of time pupils engaged in equivalent practice, and both the number of words and the number of letters which the teacher's pupils were able to correctly translate from the Morse Code. Sixty-two percent of the variance in words learned and fifty-five percent of the variance in letters learned were associated with the variance in the specific teaching skill. Pupils of the treatment group spent a significantly greater portion of their time engaged in equivalent practice (Lappert, 1975).

Competency Attainment

Teacher Corps: The Sixth-Cycle Teacher Corps study by Marsh and Lyons (1974) cited previously in the pupil growth studies also reported data on competency attainment. Teacher Corps graduates were superior to control group teachers on many of the teacher performance variables desired by Teacher Corps, such as: developing ethnically relevant curricula, using community resources in teaching and initiating contact with parents, and positive attitudes about reading development and causes of poverty. There were no differences, however, between Teacher Corps graduates and

controls on any teacher performance variable based on classroom observation of the teacher. The relationship to CBTE is very tenuous, the only link being that many of the college courses were organized around the development of specific teacher competencies.

SUNY-Cortland: Project Change, an early childhood and developmental education graduate program, is a performance-based person centered project at the Master's level at the State University of New York at Cortland. A formal research evaluation was carried out in 1972-73 comparing Project graduates, trainees, and a control group of exemplary teachers. One objective of the Project was development of an informal teaching style as measured by an Observation Rating Scale (Walberg and Thomas, 1972) and a corresponding Teacher Self-Report Questionnaire. Project teachers, both graduates and trainees, had developed an informal teaching style, while the control teachers who were considered excellent by their principals did not. A Total Teacher Profile was used to measure the extent of a teacher's participation in professional activities beyond the classroom, especially those involving leadership for change. Project teachers were more involved in all the activities surveyed (Scheers and Lickona, 1975).

SUNY-Fredonia: A teacher center designed around competency-based concepts was developed in the Hamburg, New York, Central School district by the State University of New York-Fredonia to provide both preservice training (interns) and inservice education. The Fuller Teacher Concerns Questionnaire was administered to the interns to determine their professional attitudes. Their concerns changed from the self-oriented end of the continuum toward concern for pupils. Thus, their experience in the Center made them similar to experienced teachers.

In addition, forty-six interns were observed and rated by trained observers using an observation instrument on six trait items: Acceptance of pupils and ideas, teacher warmth, pupil involvement, provision for individual differences, clarity, and organization of instruction. Overall, students were rated good on these traits. The total means were 7.1, 7.0, 6.6, 6.4, 6.5, and 6.4 respectively, on a nine point scale with 1 very poor, 3 poor, 5 average, 7 good, and 9 very good. Distinctions between the fifteen Teacher Center interns and other interns were not reported (Bicknell, 1974).

Milligan College: This Tennessee college made a study of the National Teacher Examination scores to see if Milligan PBTE educated students tend to score better than those educated by conventional methods. Since the first modules were used in the summer of 1971, the project directors decided to study student scores of those who were Milligan educated and tested between 1969 and 1971 (two year period), and compare these with the experimental group who took some part of the PBTE program between 1971 and 1973 (also a two year period). The mean score for the conventionally educated student proved to be lower than the mean score of the PBTE educated student. The difference was statistically significant at the .05 level (Clark, 1973).

University of Kansas: The Habilitation Personnel Training Project has developed a competency-based training program, in modular form, for educators of handicapped youth and young adults at the secondary level. A comprehensive evaluation effort was conducted to obtain internal appraisals, expert appraisals, field test data, and interviews (Weisenstein, 1974; Wimmer, 1975).
Pre and post tests from field testing of instructional modules have shown decreases in error rates attributable to the instructional modules. These represent decreases to levels of one third to one eighth of the former rate.

A pilot study was conducted to ascertain the differential effects of the competency-based training versus lecture methods. A group of eight experimental subjects and seven controls were randomly assigned to treatments in an introductory class on methods for teaching the mentally retarded. Controls participated in lectures on writing behavioral objectives, while the experimental subjects were assigned a trial module on the same topic. Pre- and post-test data showed no differences in error reduction scores between the groups at the .10 level. It was found, however, that the information presented in the HPTP modules was covered in less to equal the time it took to cover the same information using the lecture method of instruction (Weisenstein, 1974).

University of Nebraska-Omaha: The Secondary Education Individualized Instruction Project (SEIIP) is an individualized, system-oriented, competency-based, preservice program at the University of Nebraska, Omaha. A study was conducted during the spring semester in which student achievement and attitudes under the individualized and traditional methods of instruction were compared. No significant difference was found between the two groups in final achievement or in the amount of gain in achievement between the beginning and end of course. Both groups made significant gains in achievement during the semester (Ziebarth and Jones, 1971).

University of Nebraska-Lincoln: The University of Nebraska project at Lincoln (NUSTEP) was described previously. In a study by Larson (1970) observational ratings using an interaction scale analysis found NUSTEP students behaviorally became more team oriented, more cognizant of student participation and placed less emphasis on their own in-class direction. In a study by Hughbanks (1971) thirty student teachers were randomly selected from the pool completing the NUSTEP program prior to entering student teaching. Cooperating teachers and student teaching supervisors rated selected behaviors of the students. The students as a group did practice, in their student teaching experience, eight of the nine behaviors which they had been taught in NUSTEP. A study by Francke (1971) compared fifteen NUSTEP and fifteen conventionally trained students. Both groups taught a grammatical concept to a small group of secondary school pupils and were videotaped. The results indicated that the NUSTEP trained subjects more closely approximated the NUSTEP model than did the conventionally trained students. Student teachers from NUSTEP also displayed greater ability to select and use a variety of teaching skills and strategies. An attitude development questionnaire distributed in a study by Kelly and Walter (1971) indicated the NUSTEP program tended to achieve the affective objective of creating a more confident teacher.

Texas A & M University: Texas A & M implemented a competency-based secondary level teacher education program, and assessed teaching behaviors through observation of microteaching exercises and group activities, as well as evaluating the teaching skills and techniques performed during student teaching and training modules. Data were available on the frequency of objectives achieved, remediated, and not achieved on twenty-one modules. Typical results show close to four hundred objectives achieved, thirty recycled, and fifty not achieved (Denton, et.al , 1975).

University of Hartford: This study, described previously, randomly assigned twelve interns to an experimental and control group. The experimental group received training in utilizing equivalent practice in teaching and the other did not. The experimental group spent a significantly greater proportion ($p < .05$) of their teaching time utilizing this technique than did those who were not trained. (Lappert, 1975).

Temple University: Program VITAL is an experimental program in competency-based vocational teacher education at Temple University. The program contains eighty-nine vocational teaching competencies developed through the use of thirty learning modules. Data were collected from 114 intern vocational teachers, twenty-one supervisors, and various levels of staff. The Supervisors Rating Form used asked the supervisors to indicate the degree to which a particular intern was competent at eighty-nine different competencies. Six alternative responses were provided with five ranging from "totally incompetent" to "at the skill level of a competent teacher," and the sixth for no opportunity to observe. A mean and median score for each of the eighty-nine competencies were derived from the supervisors' ratings. A mean and median score was then derived for all interns completing each of the modules (completers) and all those not completing them (non-completers).

Median scores were then compared using the Mann-Whitney U-test. Completers received higher mean scores (greater competency) on seventy-three out of the eighty-nine competencies included in the program. Non-completers received higher mean scores on only seven competencies and mean scores were the same for both groups on nine competencies. Supervisors did not know which modules a particular intern had completed. A median rating below 2.0 on a competency (1.0 is highest of the five) was found in only three of the eighty-nine competencies for the completers and on twenty-three of eighty-nine competencies for the non-completers. Statistically significant differences ($p = .05$) were found between the median ratings received by the completers and those of the non-completers in fifty-four cases. In fifty-two of these the differences favored the completers (Adamsky, 1974).

Brigham Young: Since 1966 an Individualized Secondary Teacher Education Program has been functioning at Brigham Young University. All incoming students undergo a battery of examinations on personality, self-concept, and values. The group results are compared to other groups of student teachers as well as scores obtained on the same tests by the same students at the completion of the program. Results indicate I-STEP to be useful in improving students' self-concepts and increasing their awareness of values. (Young and Baird, 1974).

Central Michigan: An undergraduate media course at Central Michigan University is competency-based utilizing modules. Evaluation findings reveal a ninety-seven percent level of achievement on the objectives related to equipment operation and transparency preparation, and an eighty-eight percent level of achievement on the objectives related to media theory and utilization (Bergeson, 1975).

A state supported grant project at Central Michigan University developed a competency-based college level elementary science education methods experience (or course). A major theme was cooperation between university faculty members and elementary school teachers. Performance objectives were prepared in a modularized format incorporating the State Minimal Performance Objectives in Elementary Science into the college level elementary science experience in cooperation with Mt. Pleasant Public Schools.

To assess performance during Field Experience II, supervising teachers completed a checklist rating form which evaluated the students' performance in preparing lesson plans and teaching lessons in science. Sixteen performance criteria were identified for lesson planning and twenty for lesson teaching. Several limitations of the data collected were cited. The feedback from course achievements and the simulations and role-playing of mini-teaching and student teaching must be viewed as an incomplete set of data at best. No conclusive answers can thus be provided about the hypotheses generated in the content of the project.

Only 35 questionnaires were returned by supervising teachers and data were, therefore, culled in this non-random fashion. Only 18 students were rated specifically in science. Of the 16 planning factors rated, 70% of the students were rated successful in all but 6, and these were not specifically developed in the previous instructional program. Of the 20 performance teaching factors, 70% were rated successful in all but 4. Due to the limitations of the project design, no conclusions can be drawn concerning this aspect of the project.

Approximately 13 non-CBTE students and 31 CBTE students were rated on planning of lessons and actual teaching in classroom areas other than science. Mean ratings for CBTE students were higher than for non-CBTE students on all variables, however, the differences were not significant. It must be pointed out that samples involved in these comparisons are suspect due to the low rate of return of ratings, and since CBTE and non-CBTE students were not selected on a random basis, the assumption of comparability of the groups must be examined. In view of these design limitations the data cannot be used to support any conclusions concerning performance ratings (Oana, 1975).

Illinois State: A study at Illinois State University dealt with the utilization during student teaching of the knowledge and skills acquired before student teaching. Of the thirteen skills studied, ten were used on a daily basis by more than half of the respondents (McAteer and Lewis, 1975). A second study by Wiseman (1974) compared a sample of seventeen social studies student teachers from Illinois State's competency-based program with a sample of twenty-six social studies student teachers from the University of Illinois on eleven variables derived from the Purdue Teacher Evaluation

Scale, the Student Teacher Appraisal Report, and Flanders Interaction Analysis System. The eleven variables were: Co-op teacher ratings, supervisor ratings, motivation, control, subject matter, communication, methods, fairness, i/d ratio, revised I/D ratio, and extended I/D ratio. On all the variables except supervisor ratings, mean scores of I.S.U. students were higher than those of University of Illinois students, but none of the differences were statistically significant.

In the teaching performance test study by Waimon and Ramseyer (1974), previously described, the laboratory school pupils rated the student teacher's performance in the teaching test in which the pupil participated. The rating instrument (Aubertine-Johnson Teacher Performance Appraisal Scale) consisted of ten items each with a seven point scale (seven is highest rating). The ratings were averaged over all ten items on the scale and a mean pupil rating of 5.14 was attained. It was reported that this exceeds the pupil ratings given most teachers since pupils tend to rate teachers at the mid-point on instruments which consist of rating scales (no supporting data provided).

New Mexico State University: NMSU reported having hard data that no student is admitted to the final student teaching block for elementary teaching if the student has not successfully passed an arithmetic competency test which is programmed. In addition, they have much judgment feedback on the competency-based courses (Hosford, 1975).

The University of Southern Mississippi: In their program, an intern must be judged competent in all specifics of university training covered by the module before he is permitted to attempt to teach children in that area. He is observed by team leaders, university professor, or program development specialist and rated on the field competencies listed on the module (Franke, 1975).

California State University-Hayward: A record of competencies achieved is maintained for each candidate, with verification made by a variety of individuals. Teacher candidates are also evaluated by master teachers in terms of their success in promoting pupil learning (Della-Dora, 1975).

Specific Modules

Temple University: A module testing strategy implemented at Temple University's Intern Teaching Program was referred to in the section on pupil growth. An experimental group (EPIS module treatment) was compared to a control group in time spent on EPIS module activities (establishing pre-instructional set) as a percent of total lesson time and changes in incidence of use of task specifications identified as teaching steps.

Data were collected in a training or controlled phase using microteaching as a pre-and post-test with a four week interval between testing. In every case the data favored the experimental module group. The data suggest that the module was indeed doing what it was supposed to do. For a non-controlled (field) situation, data were collected in the fall of the intern's full teaching year and during the subsequent spring term, again using a microteaching

format. Preliminary inspection of field situation data suggests a cautious "yes" to the question regarding perceived utility of the behaviors contained in the module (Bruce, 1975).

Queens College: The Early Childhood Integrated Year Program (ECIYP) at Queens College, CUNY is competency-based with specific reference to the use of instructional modules as a training strategy. Although seventy-five modules were developed, data on the science and reading modules were reported since they were most heavily field tested. In December 1973, a form of The Inventory of Teacher Knowledge of Reading was administered to 117 ECIYP students, and had been administered in the Spring of 1973 to all elementary education students and early childhood students completing the old education sequence. Thirty scores were selected at random from each of these groups for comparison. The former early childhood group scored statistically significantly higher than the current early childhood group and the former elementary group. Results may reflect the effects of the instructor rather than the treatment, and it was also reported that no students in the new program had completed the reading modules at the time of the test, most were only halfway through, and only the new program students were not required to provide their names. It was concluded that consideration of these factors indicates the scores by the ECYIP group were favorable in comparison to the other group (Schwartz, 1974).

University of Wisconsin-LaCrosse: Merwin (1974) studied the effects of self-instructional modules (SIMs) upon the preparation of secondary-level social studies teacher trainees. Forty trainees enrolled in the social studies methods course were paired on the basis of a pre-test on instructional objectives. The experimental group received the four SIMs in lieu of conventional classroom instruction, with no scheduled class meetings. The control group treatment consisted of lectures, demonstration lessons, and micro-teaching. An achievement test consisting of seventy, four-option, multiple-choice items, was used for both the pre- and post-test divided into four subtests. An observation instrument, the Cognitive Quality Rating System, was used to record the cognitive behaviors of student teachers based on three unit plans, three tests, and three audio-tape recordings. A mean score of cognitive quality was derived. Achievement post-test data indicated statistically significant differences between the control and experimental groups, favoring the experimental (SIMs) group, on each of the four subtests. Data on the cognitive quality of instruction was divided to reflect each of the dependent variables (discussions, plans, tests) and a composite measure. The data reveal statistically significant differences favoring the experimental group on each of the three dependent variables and the composite measure.

University of Georgia: A program at the University of Georgia developed a proficiency module entitled Magnetism, Electricity, Heat, and Microscopic Viewing in Science Instruction for use in the elementary science methods course. Twenty senior women were randomly assigned to an experimental section of the elementary methods course. A pretest was administered to this group. Students were allowed three weeks to complete the module, which included a variety of learning activities: laboratory practicum, readings, small groups, and individual help. The post-test was then given. The increase in the mean score was significant at the .05 level (Ricker and Hawkins, 1969b).

Microteaching

The Far West Laboratory: (Borg, 1969) has done considerable work on the development of the minicourse, an instructional microteaching package. The research was intended to test the effectiveness of the minicourse in changing specific teaching behaviors. Twenty-minute pre- and post-minicourse videotaped recordings of 48 participating teachers' classroom lessons were made and scored by trained raters. Results of a post-test administered two months later indicated that the teachers had retained most of the skills acquired in the minicourse without the need for a refresher course. Also, four months after training in minicourse one, the teachers retained the significant gains found immediately after the minicourse.

Johns Hopkins University: A study of the effectiveness of individually prescribed microteaching modules was studied in the MAT program at Johns Hopkins University involving pre-interns (Young and Young 1969). The experimental group of ten interns was compared to a control group of twenty-two interns (no microteaching). Ten-minute, video-taped samples of teaching performance were compared. The experimental group demonstrated a significantly higher mean frequency of selected, specific teaching behaviors. The experimental group did not have a significantly higher indirect/direct ratio, but did have a higher revised indirect/direct ratio. The data also suggested a greater degree of flexibility or number of alternative teaching patterns by the experimental group, as well as a significantly greater number of "emitted" responses and lesser number of "elicited" responses. These are preliminary findings and should not be considered conclusive.

Illinois State University: Students in Professional Education Sequence in the Illinois State University competency-based program were randomly assigned to two treatment groups. Thirty students received formal supervision by trained supervisors along with self-instructional training materials during a microteaching experience, and twenty-five students were exposed to the self-instructional materials, but received no formal supervision. The students taught a fifteen minute microteaching lesson to a small group of peers. Four lessons were taught by trainees, and the videotape of lesson four was used as a basis for data collection. The instrument consisted of a nine point scale designed to be used by an observer to rate teachers on the skills of teaching the objective, set induction, questioning, reinforcement, cueing, stimulus variation, repetition, use of examples, closure, and silence. No significant differences were found between the two groups. It was concluded that apparently self-instructional materials are as effective by themselves as when formal supervision is added (Edwards, 1975a).

In a follow-up study two groups who underwent training on self-instructional materials (one was given supervision, the other not) were compared to a control group not experiencing self-instructional materials or microteaching. Large and significant differences between both groups and the control group were found in terms of specific teaching skills favoring the supervision group in that comparison and the two experimental groups in the other comparison (Edwards, 1975b).

Indiana University: The minicourse project at the Indiana University was described previously under the pupil growth section (Strickler, 1974). Thirty-three pre and inservice teachers taught 20-30 minute lessons to three pupils on reading decoding skills . Comparison of the pre- and post-course teaching behavior of the sixteen inservice and preservice teachers trained with the minicourse indicated that the change in teaching behavior was in the direction expected for twenty-four of the twenty-seven specific behaviors rated. The teaching behavior of the sixteen inservice and preservice teachers who participated in the minicourse training was compared with the teaching behavior of the seventeen inservice and preservice teachers who did not receive the training (control group). Point biserial correlations between the treatment condition and covariance-adjusted post-course teaching behavior were computed. Results of the analysis indicated that the frequency of teacher's use of twenty-five of the twenty-seven behaviors in their post course lessons was associated with the treatment, i.e., behavior of teachers trained with the minicourse was consistently different in the expected direction, from the behavior of non-minicourse trained teachers. For preservice teachers alone differences were found on twenty-two of the twenty-seven behaviors, for inservice teachers alone differences were found on seventeen of the twenty-seven behaviors.

Reactions and Feedback

This section consists primarily of institutional reports, however, the section is concluded with the results of surveys and an awards program.

Wheeling College: The most negative feedback encountered was from an institution that decided to abandon its CBTE program. The decision to terminate the program at Wheeling College (West Virginia) was based on an analysis including conferences and interviews with principals, directing teachers, student teachers and college based personnel who had participated in the CBTE program. The decision to terminate the program and to initiate a more conventional one was based on the following information:

1) Theoretical assumptions tended to be acceptable and supportive of a trend to develop teaching centers and the use of clinical teachers; however, implementation procedures were poorly executed in terms of scheduling and pre-professional orientation.
2) The college faculty in the arts and sciences were critical of the program since it removed students and the education faculty from the campus for the largest part of each semester. Also, program terminology and the several objectives in its overall design were not understood by the academic faculty.
3) Program objectives were constructed around seven areas of competency which were written in open-ended, subjective language. Check-mark ratings were subjectively assigned on a performance index scale, but descriptive categories including such terms as "factors, scheme, and process operations", were left undefined.

4) The entire professional sequence of twenty-one hours of credit was compressed into one semester. No provisions were made for introductory course work or for discussions of professional ethics, rights, and responsibilities.

5) No significant body of information was required of teacher candidates relating to history, philosophy, psychology, sociology and economics and its impact upon education prior to the actual beginning of student teaching.

6) Principals and directing teachers felt that a full semester of student teaching was too long. Professional sharing seemed to have its limits.

7) A sampling of opinion by participating directing teachers showed that the CBTE program was not strongly appealing to them. Inadequate pre-student teaching preparation and the extended student teaching residence requirement were pointed out as shortcomings.

8) High Schools designated as teaching centers complained of saturation problems with respect to a high concentration of student teachers for both semesters of the school year, (Caton, 1975). The relationship between several of the above concerns and the concept of competency-based teacher education should be carefully compared by the reader.

University of Nebraska-Lincoln: The NUSTEP project at the University of Nebraska-Lincoln collected reaction data in addition to the information previously described. Larsen (1970) used a survey and observational ratings of the first NUSTEP student sample and found both attitude shifts and changes in selected behaviors. A three item open-ended questionnaire was used to get descriptions of student participation in the last micro-teaching assignments. NUSTEP students came to perceive themselves less as information givers and more as facilitators of the educational process. A second NUSTEP study (Hughbanks, 1971) asked thirty randomly selected student teachers to rate themselves. The attitudes of the subjects toward the behaviors taught in the NUSTEP program were more positive at the close of student teaching than they were before the student teaching experience.

Kelly and Walter (1971) studied students trained in NUSTEP during 1969-70 (first year of NUSTEP) and 1970-71 and these were compared with students in other sections of the teacher education program. The first study used a Teacher Preparation Questionnaire which was completed by 112 graduates who were completing their first year of full-time teaching. The sample included those trained in the regular preparation program and those trained in NUSTEP. Both groups described student teaching as the most important part of their teacher preparation experience, however, a significant percentage of the NUSTEP trained students rated their NUSTEP experiences as being even better than student teaching. NUSTEP teachers as a group rated their training

as either first or second in importance, while only 61% of the traditionally trained teachers ranked these courses in the top half of the twenty items ranked. Almost 23% of these respondents ranked one or more of the courses as the worst part of their training. The NUSTEP program appears to have had considerable impact on the affective objective of creating a more confident teacher.

Part II of the Teacher Preparation Questionnaire centered on the use of innovative practices. Across all twelve items, NUSTEP trained students were significantly higher in reported rates of usage of most items ($p < .025$). NUSTEP teachers appeared more flexible, more student oriented, less concerned with control for the sake of control, more confident of their innovative capabilities within the classroom setting, and less concerned with what could be considered issues peripheral to actual classroom processes.

The Teacher Preparation Personal Reaction Form was also administered by Kelly and Walter who collected 160 responses. A significant difference ($p < .05$) appeared in attitudes reported by the two groups in favor of the NUSTEP trained sample. Among the findings were that NUSTEP students:

> Felt more adequately prepared in the use of audiovisual materials.
> Were more positive in their overall rating of the teacher preparation program.
> Described their preparation as providing better models of teaching than those commonly found in schools.
> Expressed more positive attitudes about their university supervisor's actions in identifying behaviors which they would need to demonstrate in student teaching, and how they would be evaluated and graded.
> Described their university teacher preparation instructors as modeling the new practices which were suggested.
> Were significantly more positive about the statement that their teacher preparation program offered variety in the presentation of teaching strategies (Kelly and Walter, 1971).

Temple University: The Program VITAL study also included data on the perceptions of various groups regarding the program. Instruments included a Staff Questionnaire. Intern Questionnaire, (Form B, Form C), and Supervisor Rating. The instruments asked the respondent to indicate the degree to which each of twenty-one statements described Program VITAL, degree to which certain aspects were valued, degree to which the program had been successful in developing competent teachers, etc. Data were collected from 114 intern vocational teachers, twenty-one supervisors of the interns, six senior teacher educators, seven field resource-persons, and thirty-eight resident resource-persons. Research questions and results were as follows:

1) To what degree had each aspect of the program functioned as it was designed to function?
   a) Staff indicated that only one of twenty-one aspects was dysfunctional.
   b) The interns reported three aspects as being dysfunctional.
2) To what degree did the staff value certain aspects of the program?
   Staff placed a high value on eight of nine aspects of the program (resource material mean rating was 2.1, outside of accepted range of 1.0 to 2.0, on a scale of one to five).
3) To what degree had the staff experienced problems with certain aspects of the program?
   The staff, as a whole, experienced problems with only two of the twelve aspects of the program.
4) To what degree did the staff consider the program successful in developing competent vocational teachers?
   All levels of the staff considered the program to be very successful.
5) To what degree did the interns perceive each of the eighty-nine competencies contributing to their success as vocational teachers?
   A median score within range of 1.0 to 2.0 was found for sixty-nine of the eighty-nine competencies in the program. More than half of the interns indicated that another seventeen competencies (a median between 2.1 and 3.0) made somewhat of a contribution to their success.

Also, interviews were held with the director or principal, supervisor, resident resource person, and interns in seven area vocational technical schools to obtain first-hand observations about Program VITAL. The respondents were substantially pleased with the operation of VITAL in their schools, the program is well received and highly regarded, and it is perceived as a vast improvement over the previous method of preparing teachers. In addition to convenience of the program, the real merit of the program was perceived to be the contribution made to individual teacher development. Specific problems and needs are addressed, and much is self-paced (Adamsky, 1974).

University of Kansas: The Habilitation Personnel Training Project at the University of Kansas, previously described, collected data from the participating field-test instructors using short-response questions on an Instructor Evaluation form. For the most part, the instructor's comments served to reinforce the positive findings from other sources of data. Trainees, interviewed on being introduced to competency-based project materials and after completion of the assigned modules, reacted quite positively to modules just completed. These latter opinions represented a considerable improvement over those expressed during the first interview. Finally, expert appraisers have, in total, reacted to HPTP materials in a positive manner. The modules thus far completed appear

to be usable and capable of accomplishing the purpose for which they were intended (Weisenstein, 1974).

Texas A & M University: Denton, et al., (1975) collected student reactions to modules at Texas A & M. After completing each module students were requested to complete an "Affective Antenna" providing information on the classroom learning environment specific to the module just completed. A semantic differential and Likert summative scales were used. Data on three of the modules (discipline, performance objectives, test construction) in terms of mean ratings on each of eleven items was reported. Although the data showed mixed reactions, it tended to be negative.

University of Georgia: Their science program sought reactions to an elementary science education module in two separate studies. Ricker and Hawkins (1969a) asked seventeen students who completed the module to evaluate it. Results showed:

1) All of the students in the trial group reacted positively toward the program presented.

2) The program generated interest in the laboratory practicum.

3) The module permitted students to work individually. There is an indication that individual differences were met.

4) This trial program was well received by the students. The students in this group want more of this kind of curricular activity. They considered this way of learning was more beneficial than the traditional lecture-discussion-demonstrations mode of instruction. In a follow-up study (Ricker and Hawkins 1969b) twenty students reacted to the module. All the students, except one, were favorably impressed with this means of organizing an instructional program.

Weber State College: Weber State implemented an individualized performance-based teacher education (IPTE) program in 1970. A comprehensive evaluation of the program conducted by an outside evaluator provided results in several areas. Student judgments of the program and its major component were generally positive. Analysis of student performance and opinion data show, first, that students generally react favorably to the delivery system used. Graduates who as students had a negative attitude toward WILKITS (modules) judged them to be an effective means of delivering instruction from their perspective as first-year teachers. Graduates of the program also feel that they are effective in applying the competencies learned in the program and judged themselves as more capable of self-direction than first year teachers for other programs. Each of these judgments was confirmed by cooperating teachers, school principals, and school district supervisory personnel. Graduate placement data tend to confirm the positive attitudes, as the placement rate was the highest for all teacher education programs in Utah.

The learning environment promoted by the program was judged to by non-threatening, effective, and humane, with one exception-the "tyranny of the quarter," i.e. students tend to procrastinate in an individualized program and there is some pressure to complete on schedule since if they do not complete within the quarter they receive a no-credit grade. Students and graduates indicated overwhelming approval for behavioral objectives. In early stages of the program, faculty members expressed some discomfort with their new roles and reservations regarding ability of students to achieve without meeting on a regular basis. Increased familiarity with their roles brought confidence, and students and graduates validated these new roles indicating they learn more from contact with the faculty in their new roles than they do from classes where faculty perform in their traditional roles. Students agreed that the amount of effort required for education credit was much greater than that required to obtain an equal amount of credit in noneducation classes (Parker, 1974).

SUNY-Cortland: Project Change, SUNY-Cortland, is an early childhood and developmental education graduate program which was previously described. Implemented in 1971, a formal research evaluation was carried out during the 1973-73 training year. A Teacher Self-Report Questionnaire was used to obtain feedback data from Project graduates, Project fellows (in training), and a control group who were considered excellent by their principals. The Teacher Questionnaire showed that Project teachers viewed themselves as teaching with an informal style, while the control group did not. Also, the effectiveness of the graduate courses in early childhood education was rated by teacher participants on the Hartley-Hogan Course Evaluation Questionnaire. The results of the evaluation were favorable. (Scheers and Lickona, 1975).

Brigham Young University: The ISTEP program at Brigham Young University conducted a follow-up study of their graduates. Former ISTEP students, who went through the program in the fall of 1968 and the spring of 1969, were asked to evaluate their experience in ISTEP by responding to a questionnaire. They were asked to rank each of forty-seven objectives on 1-5 scale in terms of importance of usefulness. A self-assessment part asked for indication of utilization of the objectives, and a general evaluation of the ISTEP program was requested. Thirty-three graduates who returned the questionnaire had actual teaching experience. Lowest possible total on any item was thirty-three and highest was 165. Reported values ranged from eighty-one to 149, with forty-two objectives being rated above ninety-nine (a total indicating "useful" or above). Two thirds of the forty-seven objectives were being used by at least 50% of the teachers (Baird, et.al., 1972).

University of Toledo: A study was conducted to ascertain the perceptions of student teachers and first year teachers about their training in the University of Toledo's College of Education CBTE Program (elementary). Questionnaires were sent to sixty-five first year teachers and sixty student-teachers. Twenty-two first year teachers responded and twenty-one student teachers completed the questionnaire. Responses were divided into three categories: A=First year teachers in Multi-Unit/IGE Classes; B=First year teachers in Self-Contained Classes; C=Student-teachers in winter quarter 1975,

Thirty-eight modules were rated, and ratings were on a six point scale, as follows: 1=Very Useful in my teaching; 2=Useful; 3=Somewhat Useful; 4=Very Seldom Useful in my teaching; 5=Not At All Useful; 6=I don't remember the module; D=Drop the module from the Program. The number of modules receiving a mean rating greater than three ("somewhat useful") by any of the groups A, B, or C will be noted here. No modules received a rating of four, five, or six from all three groups, two modules received such a rating by two groups, and eleven others received this rating by only one group. In general, the forty-three participants did not strongly suggest dropping any of the current thirty-eight modules in the elementary CBTE program. Field experiences were identified most frequently as the most important strength of the program. Various other strengths and weaknesses were also identified. Nineteen of the twenty-two first year teachers believed they were well or adequately prepared for their current positions (as compared to other first year teachers in their building). The three negative responses also reprted not teaching at the appropriate level, not teaching the subject area preferred, and not having permanent status (a paid aide). In response to suggestions for improving the program, field experiences rate the highest mention. The authors of the report indicate that they do not suggest the survey is the best current appraisal of the program, the number of respondents was low, and the data reflect the sequence and format of the modules at that time (Cooke and Gibney, 1975).

Michigan State University: MSU and Lansing Public Schools initiated a CBTE project and collected feedback data in 1973. Twenty-two preservice participants were asked to rate on a scale from 1 to 5 the extent to which they thought the skills they had gained would help them to be more effective teachers (1=not more effective, 5=much more effective). The results in three areas of development were as follows:

	$\bar{X}$	S.D.
Reading	4.83	.39
Social Emotional	4.04	.98
Math	3.35	1.30

In addition, when all respondents (27) were asked how valuable a future competency development program would be to teaching, the typical response was that it would be most valuable, $\bar{X} = 4.7$ on a five point Likert scale, S.D. = .86 (State of Michigan, 1973).

University of North Florida: This was recently the first institution in Florida to be accredited by the State using criteria for CBTE programs. Several follow-up questionnaires were distributed. A lengthy course evaluation document indicates a consistently generally positive reaction to individual courses. Data was collected using multivple choice, semantic differential, and open-ended response modes. A graduate student questionnaire asked students to indicate their reactions to statements about the program on a scale from one to five (1=strongly agree), and reactions were generally positive. An example is "I feel that the theory and practice of offering a competency-based program utilizing competency modules is a definite benefit to the student and credit to the University of North Florida," which received a mean rating of 1.41 (73 respondents).

A report from seventeen immediate superiors of graduates from the program in the Department of Administration and Supervision reflect a strong positive evaluation of the ability of the graduates (University of North Florida, 1975).

Northeast Missouri State University: Northeast Missouri State University developed in 1971 a Teaching Skills Center and specific program objectives in terms of competence to be demonstrated have been defined. The thirty graduate assistants who have served during the three and one-half years of the Center's operation have been unanimous in asserting that they observed significant development among their trainees. Consistently high morale seems further evidence of staff members' favorable perceptions of the program's significance. Class members evaluations have been strongly positive.

Approximately two semesters prior to the opening of the Teaching Skills Center, an instrument was administered to 550 prospective teachers to obtain their perceptions of their readiness at the end of their conventional training programs on six components. The same form was used to collect 150 ratings during the 1971 summer Teaching Skills Center program. Each Component was rated from poor to very good and assigned a value from one to five. Using the Chi Square test, in each of the six categories a difference was found that greatly exceeds the .005 level of significance. Trainee's subjective responses were also analyzed intensively at the end of each semester. Both the tone and content of the prospective teachers' subjective evaluations were overwhelmingly positive. Responses were also received from many cooperating administrators and teachers who supervise preteachers and student teachers. Without exception these statements were positive and supporting. References to gains in poise, skills, and overall readiness were made by school personnel, and current student teachers were said to be much better prepared than those who reported to these schools prior to the Center's opening. Student teachers from Northeast who are placed in districts with student teachers from other institutions seem to elicit a disproportionate share of highly favorable comparisons, with cooperating teachers frequently asserting strong preferences in their favor (Northeast Missouri State, undated).

University of Wisconsin-Superior: The Competency-Oriented Personalized Education Program (COPE) at the University of Wisconsin-Superior, initiated in 1973, utilizes learning packages (L-PACs) and a Resource Center as the focal point of the learning experience. After one year of operation, students and faculty were asked to respond to a number of statements about the COPE Program by indicating the extent to which they agreed or disagreed with each statement. Student responses (126 returns out of 200 requests) revealed a general pattern of support for the COPE Program. For example, 77% agreed with the statement "The COPE Program will prepare me to be a better teacher than will the traditional program," and 82% agreed with the statement "L-PACs were usually clear and direct." Thirteen faculty members responded to the statements about the COPE Program. The responses demonstrated a general pattern of support for the COPE Program. Eight of eleven responses agreed with the statement "the COPE Program is superior to the previous mode of instruction of the College of Education," and all thirteen indicated a belief that the "COPE Program has the potential of being a superior system of instruction for preparing teachers" (University of Wisconsin-Superior, 1974).

University of Texas at El Paso: University of Texas at El Paso has evaluated their competency-based Teacher Center Project. A Course and Instructor Evaluation Questionnaire was used to determine the effectiveness of instructional planning and presentation of the socio-cultural staff. Intern responses to the Questionnaire were in general very favorable. The intern responses regarding core organization and planning indicated a high degree of intern satisfaction. Fifteen of seventeen interns agreed that the purposes and objectives of the courses were clear and definite, and modules provided a rewarding and valuable educational experience. Several strengths and weaknesses of the Professional-Technical Core and other cores were listed (UTEP, 1973).

University of Nebraska-Omaha: The Secondary Education Individualized Instruction Project (SEIIP) at the University of Nebraska-Omaha is an individualized, systems-oriented CBTE approach. During the spring of its first operation year, a study was conducted in which student achievement (previously reported) and attitudes under the individualized and traditional methods of instruction were compared. A number of informal observations were made by the Instructional Staff concerning the attitude of students and other faculty toward the individualized instructional mode. Although much of the reaction tended to be positive, those who had negative attitudes toward the program were more extreme than those who were in the traditional mode of instruction. Those who successfully completed the course felt that the individualized approach was worthwhile although initially difficult. The new approach tended to discourage more students than did the traditional method of instruction. The attitudes and reactions of students who experience the individualized instructional mode are more positive than those of students who are instructed in the more traditional means (Ziebarth and Jones, 1971).

College of Saint Teresa: The undergraduate elementary science education program (UPSTEP) at the College of Saint Teresa (Minnesota) is a competency-based project in unified science. Students receive 40-50 learning modules (MODS), sixteen of which are required, in each of the three courses. A semantic differential was used to detect changes of attitude toward four concepts: science teaching, science, inquiry approach, and children. The instrument was administered before and after the three term sequence of Unified Science. Each of the concepts was rated on twelve polar scales, with seven rating steps for each scale. A t-test of the results indicate statitically significant changes of attitude toward these concepts and in a direction consistent with the goals. Because a valid control group was not possible the researchers could not be certainly assured that the program was the cause for apparent changes, but due to continual student feedback they were in a position to feel secure that the program was a major contributing factor.

One of the outstanding characteristics noticed by the science faculty members in observation of student teachers is their desire and ability to procure the simple equipment necessary for individualizing science investigations by children. This concurs with observations made by principals, the education department supervisor, and directing teachers. The student teachers also

prove to be creative in turning a traditional textbook approach into one of inquiry and investigation (Battaglini, et.al., 1975).

Western Kentucky University: A project conducted by Western Kentucky University was part of a national effort sponsored by Teacher Corps and the National Center for Educational Research and Development. The Western Kentucky effort was concerned primarily with ascertaining the effectiveness of the Teacher Corps program in developing and implementing competency-based teacher education in a program designed to prepare middle-school teachers. Several objectives were established and data were collected in three areas: analysis of the intern's attitudes and feelings toward Teacher Corps and CBTE, the organization of new courses related to CBTE, and the degree of faculty interest in CBTE. The first objective was to prepare interns to relate successfully to children and parents from low-income areas. The Cultural Attitude Inventory (CAI) was administered at the beginning of the project and at the post-service period. That the interns had adopted more liberal attitudes toward low-income families and their children was evident by the 8.70 increase in mean score points. Questionnaires and interviews conducted throughout the project also demonstrated progressively more realistic changes in attitudes toward disadvantaged children.

Objective two was to provide each intern with some competency in specified basic teaching skills. To determine success in this objective, thirty-six interns were asked to reply to questionnaires and opinionaires. All interns said they were more adequately prepared to enter the teaching profession than the average teacher. Only one intern felt that he could not achieve more and learn more from a competency-based program. All interns agreed their courses during the program were better in content and method of teaching than before the competency-based instruction was initiatiated, that they were using competency-based techniques in their teaching and their students were benefiting, and that they felt they were succeeding in the classroom. Information collected also was favorable on three other objectives specific to the project. It was concluded that competency-based teacher education is an effective means of dealing with teacher education, and that traditional faculty can and will adopt the concept if they are given technical assistance and support (Estes, 1971).

Mississippi State College: Mississippi State in Jackson made the transition from traditional to competency-based programs starting with the faculty and interns of their Teacher Corps Program in 1970. The program consists of eight courses in early childhood education and six hours of internship. The courses were described as converted to competency-based instruction to extents varying from fifty to one-hundred percent. Thirty-six Teacher Corps Interns, nineteen regular graduate students, and sixty-eight undergraduate students, were asked to evaluate the program using a questionnaire and a five point scale. Graduate student mean rating of competency-based instruction was 4.0 as compared to 3.2 for traditional instruction. Undergraduates gave a mean rating of 4.5 to competency-based and 3.1 to traditional instruction, while the interns rated competency-based significantly above the traditional approach (3.9 to 2.6). The majority felt that they were under less pressure, would achieve more, and would receive higher grades in CBTE.

All the faculty members involved in this program indicated a positive feeling about competency-based instruction and expressed a willingness to try the approach with their other classes. All of the faculty members felt that the grading system should be changed to a pass-fail system. Also, all the faculty members felt that the end-product of such a system was better prepared teachers and was worth the effort to overcome such problems as do exist. The initial recommendation was to involve the total teacher education faculty in an effort to implement further competency-based instruction (Napier, 1971).

Queens College: The Early Childhood Integrated Year Program at Queens College, CUNY, is a CBTE program which specifically focuses on modules. Achievement data were previously described, but feedback on the science and reading modules was also collected from students, teachers, and college faculty. Reactions appeared mixed, with both positive and negative aspects cited. Immediate implementation, learning by doing, personalization and individualization of instruction, and clarity of outcomes were cited as positive factors. Negative aspects included not providing an overall paradigm of Early Childhood Education, lack of unifying element, content laden, fractionalization of the curriculum, suited to easily identified skills only, and easy subversion of the pre- and post-assessment process (Schwartz, 1974).

University of Wisconsin-LaCrosse: Merwin's research (1974) at the University of Wisconsin-LaCrosse on self-instructional modules (SIMs) for secondary-level social studies teacher trainees was described previously. A Student Evaluation Form was used to record the opinions of the experimental group (N=20) concerning their experiences with the SIMs. A questionnaire was distributed to the experimental group following the mid-term achievement test. Responses were anonymous. The data revealed that teacher trainees using SIMs in lieu of conventional classroom instruction held a generally favorable attitude toward use of autoinstructional techniques. They found the modules to be an enjoyable and effective device for developing understandings and skills in planning, questioning, and testing. They also expressed a desire to increase the utilization of this device in the methods course.

Southern Colorado State College: An M.A.T. Program in Industrial Education at Southern Colorado State College is a competency-based program. A questionnaire was sent to the thirty-five graduating students in 1974, twenty-one responses were received. All twenty-one rated the total program as excellent; the teaching competency block received sixteen "excellent", four "good," and one "fair" rating.

Five aspects of the Teaching Competency Block were rated: use of learning modules, emphasis on independent study, emphasis on classroom-related tasks as opposed to theoretical knowledge, lack of regularly scheduled class meetings, and lack of paper and pencil tests as indicators of student achievement. The results indicate that all five aspects were well received by a large majority of the respondents. Out of 100 possible responses only three "undesirable" ratings and no "highly undesirable" ratings were received (a scale of five). Respondents were also requested to react to twelve statements

on a five point scale ranging from "strongly agree" to "strongly disagree." All twenty-one "agreed" (five) or "strongly agreed" (sixteen) that modules should be continued, and other statements received similar support (Strader, 1974).

University of Nevada, Reno: This institution collected opinions from students concerning performance based kits in one particular course. In the spring of 1974, seventy-eight percent of the students responding did not like the elementary mathematics methods kit. In the fall of 1974, seventy-four percent indicated they did not like the kit. A third opionaire found fifty-six percent indicated they did not like the kit. A third opinionaire found fifty-six percent liked the kit, and when the question was rephrased to determine if the students liked the kit better than the traditional lecture course, a ninety-three percent affirmative response was attained. Ninety-one percent would like it modified. The reading methods kit also had a mixed response. In the spring of 1974, fifty-five percent of the students indicated they did not like the kit. In the fall of 1974, after modification, sixty-eight percent liked the kit. When students were asked if they would like all courses in a kit format they responded negatively by ninety-seven percent.

In addition to the math and reading kits, the program has some mini units in secondary education general methods. A questionnaire was mailed to graduates in regard to these kits asking them to respond on a five point scale ranging from "strongly agree" to "strongly disagree."

In response to "the self-paced format of part of my professional education helped me become more self-reliant," fifty-two percent strongly agreed or agreed while fifteen percent disagreed or strongly disagreed. When asked if the competency-based format caused them to acquire more skills than the traditional approach, thirty-six percent strongly agreed or agreed, while forty-nine percent had no opionion. In terms of wanting to try self-paced materials for their own students, fifty-four percent strongly agreed or agreed, with fifteen percent selecting the two disagree categories (Johns, 1975).

Wayne State University: Wayne State University has designed a Vocational and Applied Arts Education Competency-Based Pre-Certification Program which has been in operation since fall, 1971. Cooperating teachers, interns and pre-interns were asked for their reactions to the VAE-CBTE Program in Jan. 1974. To obtain feedback from the cooperating teachers a telephone survey was conducted of those who supervised interns in fall, 1973. Forty-one of a possible forty-five respondents were contacted. Some strengths identified were:

- Global evaluation of the intern's performance is eliminated and one can concentrate on competencies supported by specific objectives.
- Program is well organized.
- Interns are able to organize course materials, plan semester's work, and write performance objectives.

Some recommendations for changes were: streamline critiquing materials, shorten test items, eliminate volume of papers to be handled, and give interns more depth in content area.

Interns were requested to list strengths and weaknesses of the program. Thirty-five of forty-five responded. Positive aspects included performance objectives, self-pacing, and instruction. Recommended changes included more class attention from college supervisor, stabilize the program, and expand the philosophy of education part.

Pre-interns, while in class, were also asked for recommendations. Data were gathered from 107 of a possible 119 respondents. Strengths included sequenced experiences leading to specified competencies, competencies made clear at beginning of program, and opportunities for practical experiences. Changes recommended include providing early experiences in the school, analyze competencies to insure relevance and allow for more teacher and pre-intern contacts (Johnson, 1974).

The Institute for the Research and Development of Competency-Based Teacher Education Programs of the Division of Teacher Education at Wayne State University, under contract with the Vocational-Technical Education Service of the Michigan Department of Education, designed and developed in-service materials for the purpose of training local vocational educators on the use of competency-based instruction.

Five modules were developed, a training workshop was held for vocational teacher educators, and six workshops were conducted for vocational education teachers. Participant vocational teacher educators felt positive about competency-based education subsequent to the workshop. They also felt they had acquired considerable knowledge through the modules. An attitude survey from the vocational teachers showed very positive feelings about competency-based education, and evaluation of the modules was quite favorable. (Sie, 1975).

Central Michigan University: CMU has in operation a competency-based program in student teaching at its Northeastern Center. Feedback has been obtained each semester from the current participants in the program. This evaluative feedback has sought to determine whether they "enjoy" the program, and whether they benefited and in what ways from the program. A strong majority of the respondents have indicated they feel they had a very relevant and helpful experience. The general commentary seems to reflect upon an awareness that they have gained, beyond the traditional classroom-student teaching experience, knowledge about "how to be a better teacher", at a level far beyond their expectations. This awareness has resulted in both expressed and observed confidence of a high order (Meyer, 1975).

The Central Michigan state grant project in elementary science, previously described, also collected student attitude and self-achievement ratings. Findings were as follows:

1) What are the outcomes of competency-based instruction in science at Central Michigan University?
A sample of 90 students selected from nine sections of students who used the CBTE materials during the initial try-out in the winter of 1974 were used as the sample for self-ratings of achievement, perception of achievement support, and attitudes toward science process and knowledge.

   a) Achievement Self Report. Results of this evaluation revealed that only two of 20 course goals received a mean rating less than three "moderately successful" (one other received a mean rating of 2.97).
   b) Achievement Support. Students in the revised try-out sample perceived the modularized, instructor independent, activity oriented assignments as the most significant factors in their achievement.
   c) Attitudes Toward Teaching Science. Pre- and post- instruction tests were given on attitudes toward 10 concepts in science. It should be noted that pre- and post-measures were not taken in matched groups. Only one of 10 comparisons resulted in a difference.

2) Do CBTE science students differ from non-CBTE students in achievement, perceptions of achievement support, and attitudes?

   a) Achievement Self Report. This was rated at the end of the initial try-out period using four groups of 40 students, three involved in CBTE and one non-CBTE. The mean achievement rating of CBTE students was greater than non-CBTE students and this difference was statistically significant ($P < .05$).
   b) Achievement Support. Using the same four groups of 30 students each, achievement support was compared on four variables. Differences in rating were statistically different for only two variables: independent activites and personal support. These were both rated higher by CBTE students.
   c) Attitudes Toward Teaching Science. The data provides no basis for distinguishing between CBTE and non-CBTE students' attitudes at the end of the science methods course (Oana, 1975).

SUNY-Fredonia: A teacher center developed on competency-based concepts was developed by SUNY-Fredonia in the Hamburg, New York, Central School District to provide both preservice training (interns) and inservice education. A questionnaire was used to determine the effects of the Teaching Center upon Hamburg teachers' planning, organization, evaluation, and instructional procedures. Teachers indicated that they increased use of: individualized instruction, organizational procedures conducive to individualization, objectives when planning instruction, other people in planning instruction, and diagnostic records and testing (Bicknell, 1974).

Milligan College: This program, previously described, collected data on National Teacher Examination scores. In addition, it was reported that the observations, the results from the students, and the evaluation from consultants causes the Milligan faculty to conclude that a small college can design a PBTE program which will be feasible and effective (Clark, et. al., 1973).

University of Southern Mississippi: Interns in this program at first expressed frustration in using competency-based models of instruction, but now have expressed favorable opinions of this method of instruction (Franke, 1975).

McNeese State University: This is a nine month program wherein juniors and seniors are involved in a combination of all education methods courses and student teaching. The program has been evaluated by the National Institute for Education through the Research and Development Center in Austin, and by the Louisiana State Department of Education for planning and implementation grants awarded in 1973, 1974, and 1975. The evaluation reports from these agencies have been good (Brand, 1975).

Rhode Island College: A field test was conducted on a competency-based course in reading methods during the spring and fall of 1973 in the Department of Elementary Education. Nine students were involved in the spring semester and thirteen in the fall. Preliminary results indicate that it is feasible to present a course in reading that follows a performanced-based design. The reactions of the students and faculty who participated in this project were, for the most part, favorable. Most of the participants were able to perform successfully in a loosely structured program. The few who experienced difficulty in this setting seemed to need more structure and guidelines. Reactions of students who participated in the course were highly favorable. When asked if they wanted more courses that followed a competency-base approach, all of the student respondents answered in the affirmative. Competency-based, compared to other courses concerned with methods of teaching, was viewed as much more valuable by fifteen students, more valuable by two students, and only one viewed it as less valuable.

Faculty who participated in the program had generally favorable reactions. In comparing competency-based courses to other courses concerned with methods of teaching, six faculty rated CBTE as much more valuable to students two rated it as more valuable, while none rated it as less or of little value. Comments from reading resource teachers and classroom teachers were also very positive (Stieglitz, undated).

Upsala College: Some results from Upsala College were reported previously, but reactions and feedback information were also obtained. In the module cluster dealing with diagnostic and prescriptive teaching, interns report success with pupils and this is substantiated by cooperating teachers (Hahn, 1975).

Arizona State University: A graduate professor at Arizona State University reports using the competency-based approach in instruction of doctoral seminars for four semesters. It has been particularly well received by doctoral candidates who consider it a refreshing approach because of the individual nature of the instruction. CBTE is also being implemented in the administrative internship program. A faculty member has supervised these internship experiences and believes that the approach is very desirable (Wochner, 1975).

Indiana University-Purdue University: The Indiana University-Purdue University at Indianapolis has developed several CBTE modules. Each module is field tested and evaluated. The students receiving the CBTE instruction have indicated both positively and negatively about their instruction. During their instructional period they are somewhat negative. They are positive about CBTE instruction being field centered, specific, and providing alternative learning activities. Graduates of the program have indicated they felt their learning superior to traditional instruction. Faculty who became involved in CBTE module development as a result of a Teacher Corps project are now using the modules in their regular classes for preservice and inservice training (Britton, 1975).

Towson State College: This college has been developing a competency-based program in student teaching and for several elementary education courses. Reactions to the competency-based program can be summarized as follows:

1) Students feel very positive about the competencies stated and the criteria

2) Public school teachers feel positive (though less so than students) about the program. The objection in the cases where negative reaction came is in the area of monitoring an extensive competency listing (Hauserman, 1975).

University of Missouri-St. Louis: This institution has a competency-based approach in two courses and the teaching apprenticeship. The psychology of Teaching and Learning course was rated with a semantic differential (six point scale) on ten items, all of which appeared to receive a favorable response. The School in the Contemporary Society course was rated in the same manner with similar results. Follow-up data on teaching apprentices indicates they become very proficient in the skills taught and can deal with the skills in a wide variety of ways and in a number of different situations. Feedback from those students indicates that they are using the skills both in classroom management and instruction with good results. An 85-90 percent hiring rate within the first year after graduation was reported (Laham, 1975).

Governors State University: The theory of competency-based instruction is being applied on a university-wide basis. Student attitudes were reported as diverse, more so than the faculty; however, the students support competency-based instruction because it clarifies what is required, permits more flexibility in satisfying requirements and allows credit for legitimate experiences. Competency-based instruction has opened up instruction to more flexible scheduling and liberalized independent study (Wight, 1974).

East Tennessee State University: This CBTE program has been terminated due to loss of Teacher Corps funds. The effectiveness of trainees in promoting pupil learning was determined to be as good or better than traditionally prepared students. Reactions to the program were reported as being positive (Finchum, 1975).

University of Michigan: An elementary science methods and an elementary math methods course are described as competency-based at University of Michigan. Reactions from both students and professors in the courses indicated that such a competency-based program should continue. Students felt that the amount of work required for a competency-based course was greater than that necessary for a traditional course. They felt, however, the course was worth the effort, but should have more credit. The Undergraduate Occupational Teacher Education Program is also competency-oriented and began in 1971. Interim evaluation has indicated its success, courses have received high ratings, and attrition is less than five percent (Cohen, 1974).

Michigan Survey:
In March, 1974, a survey form was distributed to the thirty teacher education institutions in Michigan to determine the extent of, and reaction to, competency-based teacher education activity. The question asking for a reaction to their program received twenty positive and zero negative responses (Roth, 1974b).

Educational Testing Service:
A comprehensive survey of CBTE institutions conducted by Educational Testing Service in 1973 was distributed to 124 institutions. One question asked that, if modules were used extensively, would respondents indicate their level of satisfaction with the modules currently in use. Reactions were mixed, ranging from very good (11), satisfactory (19), adequate (13), and mixed (14), to inadequate (1) (Sherwin, 1973).

AACTE:
It is also of interest to note that the American Association of Colleges for Teacher Education in 1971 awarded Weber State's program the Distinguished Achievement Award (its highest award) for excellence in teacher education. There have been approximately 550 observers of the program and their reactions have been overwhelming positive. In 1974 the Distinguished Achievement Award went to the Oregon College of Education, a CBTE program. In addition, in 1974, one award for Distinguished Achievement (second highest award) went to a CBTE program (the University of Bridgeport), and four of its five Certificates of Recognition went to CBTE programs (AACTE, 1974).

In 1975, a Distinguished Achievement Award went to the competency-based program at Saint Edward's University, and two Certificates of Recognition went to CBTE programs (College of Saint Teresa, University of Pittsburgh), (AACTE, 1975).

Summary

The purpose of this study is to report evidence on the effectiveness of CBTE programs. The methods of collecting data consisted of two surveys, and an ERIC search using a variety of descriptors. In total, information was obtained relating to 56 institutions and 65 programs from 66 different studies. It seems reasonalbe to assume that significantly more information exists.

Three means of determining program effectiveness were selected and used as categories to classify the information. The first was pupil growth data which included only studies where actual measurement of growth or behavior was used. This was divided into subcategories of effects of long term teacher-pupil contact (one semester or more), short-term teacher-pupil contact (microteaching, student-teaching), and effects on pupil behavior. A second indicator of effectiveness was the capability of the program to provide trainees with the competencies identified. Any evidence obtained through actual observation and assessment of competency was accepted in this category and placed into one of three subcategories: assessment during the program, institutional follow-up assessment, and employer assessment. The third category was program reactions including perceptions of achievement and attitudes about the program from faculty, students, graduates, employers, and external evaluators.

In the pupil growth category nine studies were reported from eight different institutions. Seven of these studies were positive, and two found both positive and "no difference" results. Only one program provided data that could be considered a long term growth study. Eight studies were conducted which were classified as short term growth studies.

There were thirty-one studies in which the attainment of competencies was assessed. Twenty-two found positive results, three found both positive and "no difference" results, two had "no difference" results only, and four had no conclusion. No programs provided employer assessment data. Only two conducted their own follow-up assessment of graduates.

Forty-five reports were found to have information concerning reactions and/or feedback on programs. Thirty-nine had generally positive feedback, four had mostly mixed reactions, and two were mostly negative.

DISCUSSION

Information Reported

The survey and literature search revealed a variety of types of studies and information regarding the effectiveness of competency-based teacher education programs. It is highly probable that this information represents a small percentage of the information being collected on these programs. For example, all CBTE type programs assess the ability of their trainees in terms of their attainment of the specified competencies, which is evidence of the effectiveness of the program to effectively deliver the specified objectives. Very little of this has been reported, although this may partially be due to programs not keeping formal records of competency achievement, rate of successful completion, or other evaluation of training materials and experiences. Nevertheless, it seems reasonable to assume that significantly more information exists.

It is noted that most of the information on CBTE programs is positive. Another way of stating this is that little negative information was reported. It may be that there is a tendency to report findings only when they are generally not successful. The impact of the so called Hawthorne effect needs to be considered, as pointed out be Scriven.

> As long as you can coast along on the Hawthorne effect, that will work splendidly; but it is a disservice to everybody to suppose that you can disregard the extent to which you owe your success to that handy little booster (Scriven, 1974, p. 158).

The purpose of this paper is to report the findings on competency-based teacher education programs. This entailed a process of compiling available information into one report, but it did not involve an analysis of the research methodology in each of the studies reporting empirical data. Many studies were of questionable validity and this was pointed out whenever possible. The reader should investigate thoroughly any studies which are of interest. An analysis of these studies might be the topic of an entirely different paper.

Program Effectiveness

An initial question that needs consideration in a study of this nature is what one means by the term "effectiveness", that is, what types of data or information are acceptable. Looking at it in another way, recognizing that there exists a variety of types of information, how should it be appropriately categorized. There are various ways in which such information can be categorized, such as:

- Evaluation of program components (courses, field experiences, etc.)
- Instructional competence criteria (pupil growth, teacher performance of skills, or cognitive assessment)
- Stage or time at which data is collected (during coursework or module completion, during microteaching, during field experiences, and follow-up studies in the classroom)
- Sources of data (students, faculty, external evaluators)
- Type of data or means of collecting it (empirical research studies on pupil growth, research studies on demonstrated competency attainment, clerical records on rates of module completion, etc.)
- Subjective ratings of the program in any of these categories

An obvious first area to look at in terms of defining program effectiveness is whether or not trainees can positively affect pupil learning (broadly defined). This is the ultimate criterion of effectiveness. Another area which is part of the meaning of program effectiveness, is to evaluate the program as a training system, i.e., can it provide its trainees with the knowledge, skills, and attitudes which are defined as objectives of the program. Some would argue that since we don't know what skills, etc., affect pupil learning, then teacher education programs can only be evaluated in terms of their ability to provide trainees with the competencies the program developers believe are essential. This is the topic of another paper, however, and will not be considered further here.

A secondary consideration is the degree to which students, faculty, etc., found the program to be enjoyable and capable of meeting their needs. Presumably, if one enjoys an experience, morale will be high among both faculty and staff, more will be learned, and the program will more likely achieve its objectives. This factor will also contribute to the frequently cited humane atmosphere of the program and thus needs to be considered.

A host of other factors might enter into one's definition of program effectiveness. One such factor cited earlier, the degree to which a program is implemented in relation to its design, would be of interest in evaluating a program at a particular institution, but not necessarily in terms of the effectiveness of a particular conceptual approach to teacher education. The degree to which a

program provides for individual needs, variety in modes of instruction, alternative objectives, degree of self-pacing, personlization, etc. have also been cited, but are more process type criteria and should all be reflected in terms of trainees' ability to teach or achieve an outcome criterion. These factors are also beyond the scope of this study and might better be examined in a theoretical discussion of program structure instead of outcomes.

Competency Validation

Another area of concern is the term competency validation. This also has several interpretations, the most meaningful being the verification of the relationship between the teaching competency and pupil outcomes. The more one knows about this the more effective the training program can become. The pupil growth studies category accounts for this type of validation, and hence serves as evidence of program effectiveness.

Another approach to competency validation is to involve a large number of practitioners and/or experts in reaching consensus on which competencies should be incorporated into the program. Assuming this consensus is correct, the program is thus more effective. Theoretical models and definitions of CBTE include such consensus activities in competency development, and hence one might assume this to be part of all, or most, CBTE programs, and thus need not be reported. On the one hand, it can be argued that unless there are data to relate the competencies to pupil growth there is no basis for assuming the competencies are of value, and thus there is no evidence that the program is more effective. Evidence of the consensus type was therefore not considered in this study although it is of value to individual programs.

Information Categories

The categories selected for this study are based on several of the classification strategies and meanings of program effectiveness discussed above. The effectiveness of trainees and/or graduates to promote pupil growth is of primary importance. There are at least three degrees of impact which provide unique information. The period of one semester or more of teacher-pupil contact was selected because it reflects teacher (program graduates) influence over a longer period of time, can use higher order cognitive criteria for pupil growth, and can also provide time for influence on pupil affective change. Remember that the term "pupil" refers to learners in the elementary and secondary schools. Since the contact period is longer it provides a more stable and representative sample of teacher behavior and avoids possible spurious short term effects. Teachers are not likely to be in contact with a given class for a period longer than one year, although a time sampling over a number of years with different classes would be of value.

Teacher influence on pupil learning as a result of short term contacts (less than one semester) is also of interest and it is more practical to collect data on these encounters. Student teaching which is generally less than one full semester (nationally, the student teaching average is twelve weeks - Johnson, 1968), minicourses, and microteaching are included here. It can be legitimately argued that teacher-pupil contact time is significantly different for these situations and separate categories are warranted, however, since little data were in the pupil growth area these studies were grouped together. Future studies might take these separate categories into consideration.

Pupil behavior is another indicator of teacher influence and implies, but is not evidence of, a pupil's growth. It is important to note that all three pupil growth subcategories, only those studies which provided data where growth or behaviors were actually measured were included here. There are other sources of information about pupil growth as it correlates with CBTE trained teachers, such as reactions and feedback from cooperating teachers and employers, but such descriptive information was categorized under the Program Reaction category.

The second main element in the meaning of "effectiveness" was ability of the program to deliver the defined competencies to trainees. Evidence that program trainees actually do attain the competencies was placed in this category, but again only data resulting from actual assessment were included. The different times that data are collected and the various sources of such information were used to determine subcategories. Assessment during the program takes place as the trainee works through the modules and/or completes coursework. Evaluation by faculty and cooperating teachers during field work is considered during the program. Follow-up studies included here are only those instances where institution staff actually observe and assess graduates' competency in the classroom. These instances are, of course, rare. A different source of information is employers, and here again only actual observation and assessment of competency was accepted in this category.

The Program Reaction category was divided on the basis of the source of information, i.e , faculty, trainees, graduates, cooperating teachers and employers, and external evaluators. Program reactions could relate to pupil growth and competency achievement, but being a more subjective than quantitative type of information, such feedback was placed under this broad category. Areas covered in program reactions also included opinions of the training experience, perceived achievement and competence, and evaluation of specific program components. If an employer reported he/she believed graduates of a CBTE program in general performed differently than those of other programs, but did not have eivdence of this through actual performance evaluations, the information belongs in the Program Reaction category.

CBTE Definition

The most serious issue in a discussion of the effectiveness of competency-based teacher education programs is one of definition of CBTE. In many cases evaluation data were collected on significantly different types of programs. Some have developed self-instructional learning units where students work at their own pace individually until they have completed the cognitive objectives. This has been labeled as CBTE. Another program offers a variety of instructional alternatives, including field experiences, for each competency as the essential ingredient. This is labeled as CBTE. Others have programs where demonstration of teaching skill is the essential component, and mastery of knowledge is only an enabler to achieve the competency. This type of program has been labeled as CBTE. Without the demonstration of performance, the program is not competency-based according to these individuals. Still others believe CBTE consists of a series of experiences and training materials, and believe it is not appropriate to call any training competency-based unless one is speaking of an entire program. Microteaching and minicourses are also reported as CBTE programs. This is no single type of CBTE program which can be used for comparisons.

There are those who maintain that a program must have modules to be competency-based. But here again there is a problem. Those self-contained instructional units referred to above are called modules in some programs. Others maintain that modules require performance demonstration. Still others describe their modules as having a variety of instructional alternatives within them leading to the competency. There is little consistency among these "modules." It was also found that modules were effective in some programs, but were not a viable approach in other programs. This may depend as much upon who is developing a program as what is being developed. A good teacher may be effective in either approach. Requiring modules as a criterion for CBTE does not contribute to clarifying the definition of CBTE unless modules are defined.

A variety of strengths and weaknesses were cited in these studies. In view of the variations in programs and individual faculties and instructors, these may be unique to those specific programs and cannot be related to a concept called competency-based teacher education. Much depends on the ability of developers to design appropriate materials, modules, etc., and opinions of these programs and materials probably reflect more the degree of instructors' design expertise than anything else. Any conclusions drawn about CBTE in general, therefore, are tenuous at best.

CONCLUSIONS

The studies reported in this paper are small in number and thus one cannot be certain that they accurately represent the status of findings in CBTE. Information on the effectiveness of competency-based teacher education has been reported by a number of institutions and it is continuously increasing.

Statements about CBTE in general or comparisons of the CBTE approach with other approaches cannot be made in the absense of a generally accepted definition of CBTE and a number of operational programs whose design is consistent with such a definition. A major problem with the information reported on competency-based teacher education programs is that CBTE is not the same from institution to institution. Since these programs differ in very significant ways, any conclusions drawn from the data about the concept of CBTE in general would be specious. This situation will probably continue to exist. It is most difficult to draw a conclusion about a program type when most of the programs have little real similarity when examining specific program elements. This also indicates that research on the comparison of CBTE and traditional programs would not appear to be very productive (unless on specific programs for a particular institution's purposes). Efforts should be directed toward finding which instructional activities enhance pupil learning.

These findings do not warrant conclusions about specific CBTE program aspects. An alternative is that it may be more appropriate to draw conclusions on specific aspects of programs which have a sufficient degree of similarity at a variety of institutions. Some examples are modules, field experiences based on competency demonstration, pre-specified precise objectives, self-pacing, personalization, alternative modes of instruction, etc. Even when considering specific aspects of programs, however, there is a problem of definition and hence consistency.

Conclusions about CBTE in general cannot be drawn from limited efforts which involve only specific aspects of CBTE. The concern is that programs may be employing only one technique which is associated with CBTE, and conclusions are being drawn about CBTE in general from these limited efforts. Consider, for example, a situation where students utilizing self-instructional materials are compared with students in a lecture course, and no differences are found in cognitive learning. Conclusion: the CBTE (or traditional) approach does not make a difference. It may be concluded from the example that it is not worth the effort to develop a CBTE program, or, on the other hand, it is a lot cheaper to have self-instructional materials and fewer professors when the results show no difference. In either case, the conclusion is obviously unwarranted. Aside from other concerns, self-instructional materials do not make a CBTE program (they may not even be considered modules). Also, focus

on cognitive outcomes is not consistent with a "performance" based program.

The most advisable approach to evaluation of CBTE is to examine each program's components and evaluate each program in terms of its outcomes in determining effectiveness. First, the lack of uniformity among programs prevents a general evaluation of "CBTE." Second, the problem of definition is significant in terms of drawing conclusions about the CBTE approach in general, but what is the educational significance of such a dialogue? What difference does it make to a particular institution which is striving for a quality program and incorporating elements in its program which may or may not be consistent with a common definition of CBTE? The strengths and weaknesses identified in the reports described in this paper should be considered unique to those institutions and/or programs. In responding to effectiveness of CBTE, one needs to ask how the program has been defined and indeed which specific program is under consideration.

Any discussion of this topic should clearly identify the criteria of effectiveness being utilized. The classification system used in this study is one mechanism for analyzing information on CBTE program effectiveness. A study of the effectiveness of CBTE programs must deal not only with the problem of the definition of CBTE, but also with the meaning of program effectiveness. There are various ways in which effectiveness might be perceived.

It must be stated that no conclusion can be drawn concerning the effectiveness of CBTE in general from the data available at this time. The information reported here is mostly positive, but this might be expected. It is interesting to note that there appears to be little evidence in the literature on the effectiveness of traditional programs. Perhaps "traditional" is subject to definition concerns also. Nevertheless, in both instances it is clear that much remains to be done, and more data are needed. Usually in education research no general conclusions can be drawn, and this study is no exception. It can be said, however, that results are mixed, but basically encouraging (most are positive). Institutions may thus be encouraged to experiment in order to find those aspects or their type of CBTE program which are appropriate to their situation and institution. They should not, however, expect overnight or necessarily overwhelming success (a profound statement, it is like stating, as often is, that CBTE is not a panacea--but what is?).

It is concluded that the "CBTE" type programs reported which were carefully planned, thoroughly developed, appropriately revised based on feedback, and had faculty support, have had a reasonably high

degree of success. Although under these conditions most programs of any type might be successful, this will depend on a variety of variables, most of which are unique to a given institution or program.

Finally, if any institution has information on "effectiveness" of its "CBTE" program and wishes to have it included in a future version of this compilation, that information would be most welcome.

SUMMARY OF EVIDENCE ON EFFECTIVENESS OF CBTE PROGRAMS

INSTITUTION/STUDY	EVIDENCE: Pupil Growth			Competency Attainment			Program Reactions				
	long term	short term	pupil behavior	during	follow-up	employer	faculty	trainees	graduates	coop. teach. & employers	external
American Association of Colleges for Teacher Education											X
Arizona State University							X	X			
Brigham Young University (Baird et al., 1972)									X		
Brigham Young University (Young and Baird)				X							
California State University-Hayward				X							
Central Michigan University (Bergeson)				X							
Central Michigan University (Meyer)								X			
Central Michigan University (Oana)				X				X			
East Tennessee State University							X	X			
Educational Testing Service							X				
Far West Laboratory				X							
Georgia, University of Ricker and Hawkins, 1969a)								X			
Georgia, University of (Ricker and Hawkins, 1969b)				X				X			
Governors State University								X			
Hartford, University of		X	X	X							
Illinois State University (Edwards a)				X							
Illinois State University (Edwards b)				X							

EVIDENCE

INSTITUTION/STUDY	Pupil Growth			Competency Attainment			Program Reactions				
	long term	short term	pupil behavior	during	follow-up	employer	faculty	trainees	graduates	coop. Teach. & employers	external
Illinois State University (McAteer and Lewis)				X							
Illinois State University (Waimon, Bell and Ramseyer)		X									
Illinois State University (Waimon and Ramseyer)		X		X							
Illinois State University (Wiseman)				X							
Indiana University		X		X							
Indiana University-Purdue University							X	X	X		
Johns Hopkins University				X							
Kansas, University of				X			X	X			X
McNeese State University											X
Michigan State University								X			
Michigan Survey							X	X		X	
Michigan, University of							X	X			
Milligan College				X			X	X			X
Mississippi State College							X	X			
Missouri, University of								X		X	
Nebraska, University of-Lincoln (Franke)		X		X							
Nebraska, University of-Lincoln (Hughbanks)				X				X			
Nebraska. University of-Lincoln (Kelly & Walter)				X				X	X		
Nebraska, University of-Lincoln (Larson)				X				X			

INSTITUTION/STUDY	EVIDENCE										
	Pupil Growth			Competency Attainment			Program Reactions				
	long term	short term	pupil behavior	during	follow-up	employer	faculty	trainees	graduates	coop. Teach. & employers	external
Nebraska, University of-Omaha				X				X			
Nevada, University of-Reno								X	X		
New Mexico State University				X							
New York, State University of-Cortland				X	X			X	X		
New York, State University of-Fredonia				X				X			
North Florida, University of								X	X	X	X
Northeast Missouri State University							X	X		X	
Queens College-CUNY				X			X	X		X	
Saint Teresa, College of							X	X			
Southern Colorado State College								X			
Southern Mississippi, University of				X				X			
Teacher Corps	X				X						
Temple University (Adamsky)				X			X	X		X	
Temple University (Bruce)		X		X							
Texas A & M University				X				X			
Texas, University of-El Paso								X			
Toledo, University of								X	X		
Towson State College								X		X	
Upsala College		X						X		X	

EVIDENCE

INSTITUTION/STUDY	Pupil Growth			Competency Attainment			Program Reactions				
	long term	short term	pupil behavior	during	follow-up	employer	faculty	trainees	graduates	coop. Teach. & employers	external
Utah, University of		X									
Wayne State University (Johnson)								X		X	
Wayne State University (Sie)								X			
Weber State College							X	X	X	X	X
Western Kentucky, University of								X			
Wheeling College							X	X		X	
Wisconsin, University of LaCrosse				X				X			
Wisconsin, University of-Superior							X	X			

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